

Abstract Submitted
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A Cross-Benchmarking and Validation Initiative for Tokamak 3D Equilibrium Calculations¹ A. REIMAN, Princeton Plasma Phys Lab, A. TURNBULL, T. EVANS, N. FERRARO, General Atomics, E. LAZARUS, Oak Ridge National Laboratory, J. BRESLAU, Princeton Plasma Phys Lab, A. CERFON, New York University, C.S. CHANG, R. HAGER, Princeton Plasma Phys Lab, J. KING, Oak Ridge National Laboratory, M. LANCTOT, General Atomics, S. LAZERSON, Princeton Plasma Phys Lab, Y. LIU, Culham Science Centre, G. MCFADDEN, National Institute of Standards and Technology, D. MONTICELLO, R. NAZIKIAN, J.K. PARK, Princeton Plasma Phys Lab, C. SOVINEC, University of Wisconsin, Madison, Y. SUZUKI, National Institute for Fusion Science, Kyoto, P. ZHU, University of Wisconsin, Madison — We are pursuing a cross-benchmarking and validation initiative for tokamak 3D equilibrium calculations, with 11 codes participating: the linearized tokamak equilibrium codes IPEC and MARS-F, the time-dependent extended MHD codes M3D-C1, M3D, and NIMROD, the gyrokinetic code XGC, as well as the stellarator codes VMEC, NSTAB, PIES, HINT and SPEC. Dedicated experiments for the purpose of generating data for validation have been done on the DIII-D tokamak. The data will allow us to do validation simultaneously with cross-benchmarking. Initial cross-benchmarking calculations are finding a disagreement between stellarator and tokamak 3D equilibrium codes.

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